2nd edition

SHELLFISH WATER QUALITY

Photo: Bruno Lafontaine, Environment Canada

Douglastown, Gaspé region

Background

The Shellfish Water Quality Protection Program (SWQPP) is a monitoring network for assessing the bacterial water quality in shellfish beds. Its purpose is to authorize the growing and harvesting of molluscan shellfish. When a shellfish bed is contaminated by fecal coliforms, the molluscs living there absorb and concentrate these contaminants. Coliforms have no effect on shellfish survival or growth, but they do render them unfit for human consumption. The classification of shellfish beds by level of contamination ensures the protection of consumer health. Because fecal coliforms are associated with the feces of warm-blooded mammals like human beings, they are indicators of unsanitary conditions in the aquatic environment. Consequently, the information collated by the Program can be used to track trends in the sanitary quality of the water along the shores of the Estuary and Gulf of St. Lawrence.

This includes such information as the location of shellfish beds, fecal coliform concentrations and pollution sources. The Program covers the coastal zone stretching from Baie-Sainte-Catherine to Blanc-Sablon, on the north shore, and the Gaspé peninsula from Cacouna to Miguasha, including the Magdalen Islands (Figure 1).

Figure 1. Marine area covered by the Shellfish Water Quality Protection Program

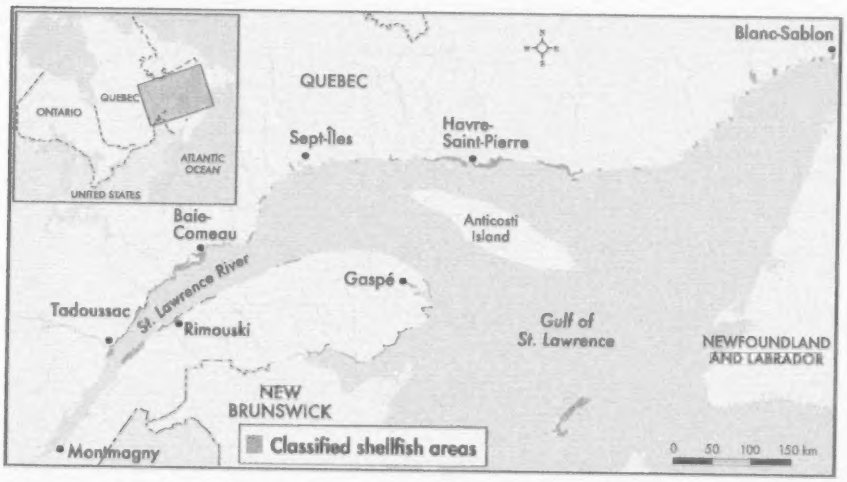


Photo: Yves Lamontagne, Environment Canada

Carleton (Tracadigache Point), Gaspé region

Overview of the Situation

The number of shellfish beds assessed under the Shellfish Water Quality Protection Program has grown over the past 15 years, jumping from 10 in 1987 to close to 254 in 2005 (Figure 2). Of this number, 124 sectors are open to shellfish harvesting, 103 of them permanently, with the remaining 21 being open part of the year. However, 130 shellfish beds have remained closed due to persistent bacterial contamination (Figure 3).

An additional 16 shellfish beds have been assessed since 2002 (Table 1). Seven of them have been approved for harvesting, one has received conditional approval, and eight have been closed altogether. Although the number of classified shellfish beds has increased, the proportion of beds approved, conditionally approved or closed in the zones covered by the Program remained stable between 2002 to 2005. The bacterial quality of the water in the Magdalen Islands and on the North Shore is still better than in the Gaspé region and Lower St. Lawrence. Indeed, in the Magdalen

Figure 2. Number of CSSP-classified shellfish beds, 1987 to 2005

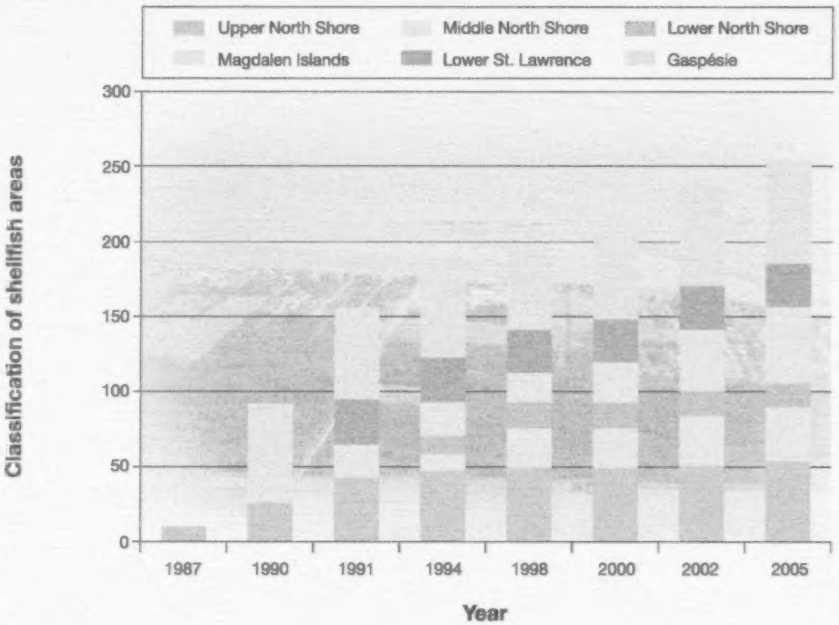


Figure 3. CSSP classification of Quebec shellfish beds, by region, in 2005

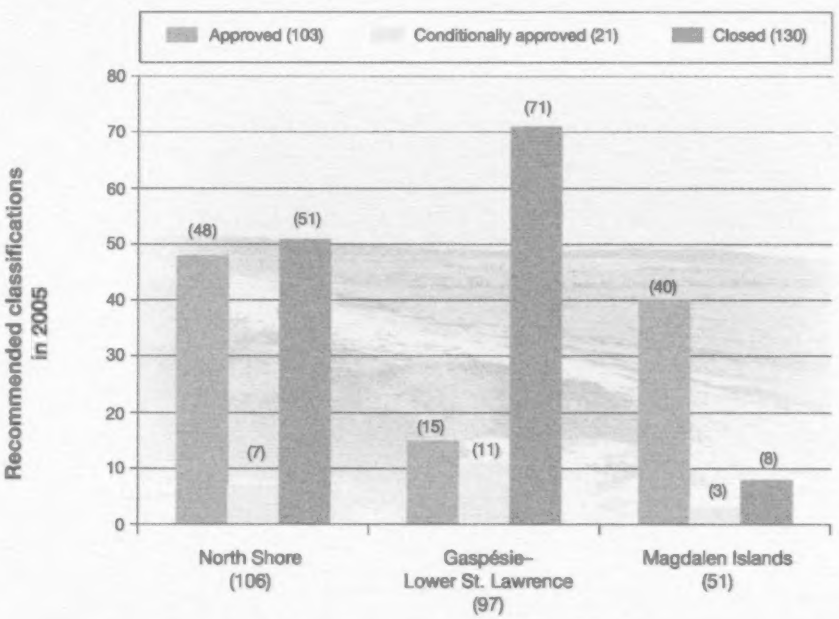
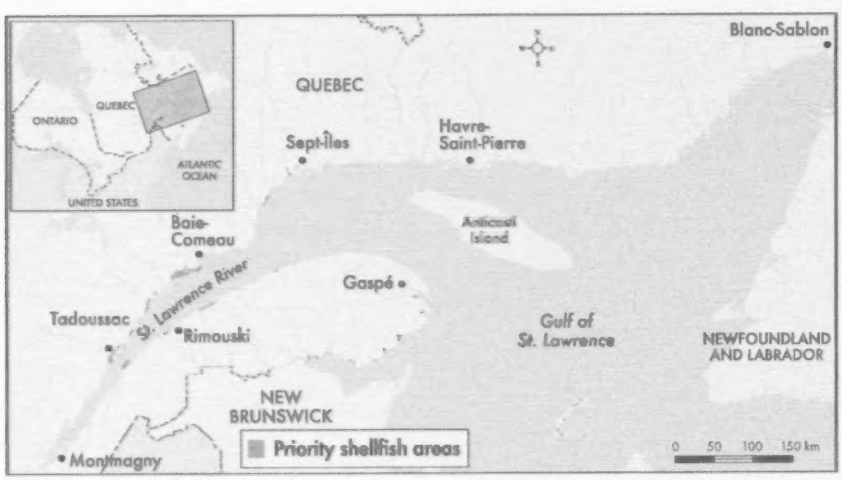


Table 1. Classification of shellfish areas

Region	Areas			Total
	Approved	Conditionally approved	Closed	
1988				
Magdalen Islands	–	–	–	0
Gaspésie–Lower St. Lawrence	4	–	15	19
North Shore	7	–	4	11
Total	11		19	30
1993				
Magdalen Islands	19	1	4	24
Gaspésie–Lower St. Lawrence	6	11	74	91
North Shore	30	15	14	59
Total	55	27	92	174
1998				
Magdalen Islands	14	2	4	20
Gaspésie–Lower St. Lawrence	7	6	69	82
North Shore	35	11	47	93
Total	56	19	120	195
2002				
Magdalen Islands	34	3	4	41
Gaspésie–Lower St. Lawrence	15	10	71	96
North Shore	47	7	47	101
Total	96	20	122	238
2005				
Magdalen Islands	40	3	8	51
Gaspésie–Lower St. Lawrence	15	11	71	97
North Shore	48	7	51	106
Total	103	21	130	254

Figure 4. Location map of 49 closed shellfish beds deemed a priority to reopen to harvesting



Islands, only eight beds were closed out of a total of 51, whereas 71 areas of a total of 97 were permanently closed in Gaspésie–Lower St. Lawrence. These shutdowns are due in large part to the lack of adequate wastewater treatment systems, storm-sewer overflows and poorly maintained or obsolete septic systems near the shoreline, not to mention the ill-considered farming practices of some municipalities.

Since 1992, the staff of the Shellfish Water Quality Protection Program have worked in co-operation with local and government partners to remedy the pollution problem. Their goal is to provide renewed access to some 49[1] closed and potentially resource-rich shellfish beds (Figure 4). These 49 areas were selected as indicators to measure changes in water quality along the shoreline of the Estuary and Gulf of St. Lawrence. Of these 49 beds, 22 are located in the Gaspé–Lower St. Lawrence region, 22 are on the North Shore, and 5 are in the Magdalen Islands.

1. The number of shellfish beds to be recovered grew from 42 to 49 between 2002 and 2005 due to the subdivision of these areas. The surface area involved did not change.

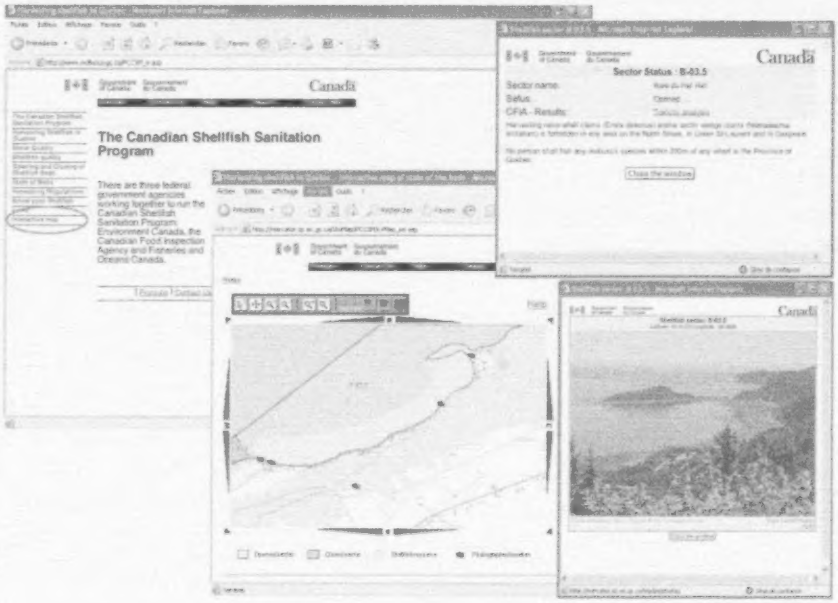
Photo: Yvan Lamontagne, Environment Canada

Baie des Homards, North Shore

Riverside municipalities in 14 of the 49 identified areas have introduced or upgraded existing wastewater treatment systems and the water quality has been vastly improved (Figure 4). Nonetheless, municipal wastewater overflows and contaminant loads from neglected septic systems on isolated properties continue to be sources of contamination that limit shellfish harvesting along the Quebec coast.

These efforts aside, and based on the standards of the Shellfish Water Quality Protection Program, not a single shellfish bed was re-opened to harvesting between 1992 and 2002. Since 2002, however, two shellfish beds in the Magdalen Islands and on the North Shore were reopened. Another two in the Gaspé region are currently being reassessed and may reopen to harvesting shortly. However, one area on the North Shore that had previously been open year-round has been closed in summer due to municipal effluent discharges.

Figure 5. *Harvesting Shellfish in Quebec*, Web site for the general public of the CSSP



Note: The status of Bed B-03.5 is that of November 7, 2005.

Outlook

The reasons for closing shellfish beds in Quebec, just as in the Pacific and Atlantic regions, can be traced back to isolated homes and municipal sewer systems.

The safety of shellfish resources is the joint responsibility of Fisheries and Oceans Canada, Environment Canada, and the Canadian Food Inspection Agency (CFIA).

The specific role of Environment Canada (www.ec.gc.ca) is to conduct surveys of pollution sources and assess the bacterial water quality in shellfish beds according to the standards of the Canadian Shellfish Sanitation Program (CSSP). Environment Canada recommends the opening or closure of these areas to Fisheries and Oceans Canada (DFO) and also takes part in the restoration of closed areas.

Fisheries and Oceans Canada (www.dfo-mpo.gc.ca) has the legal authority to open or close shellfish beds and also conducts surveillance monitoring of closed areas.

The Canadian Food Inspection Agency (www.inspection.gc.ca) controls the quality of shellfish destined for export or import and monitors marine biotoxins in shellfish.

In a bid to better disseminate the information generated by the Canadian Shellfish Sanitation Program (CSSP), Environment Canada, Fisheries and Oceans Canada and the Canadian Food Inspection Agency launched a Web site in spring 2004. Intended for the general public, *Harvesting Shellfish in Quebec* (www.mollusca.gc.ca) contains a wealth of information on the CSSP and includes an interactive map that provides real-time data on the classification of shellfish beds in Quebec.

Photo: Yves Lamontagne, Environment Canada

Pointe Basse, Magdalen Islands

KEY VARIABLES

Shellfish beds are ranked by one of three classifications indicating their suitability for harvesting based on bacteriological water quality: approved, conditionally approved or closed. In order to be declared open for harvesting, a shellfish bed must meet Canadian and American standards for sanitary control.

a) the area must not be contaminated with fecal matter or deleterious or poisonous substances to the extent that consumption of shellfish might be a health hazard;

b) the median value of the water may not exceed 14 fecal coliforms per 100 mL of water;

c) no more than 10% of the samples exceed 43 fecal coliforms per 100 mL;

d) in case of paralytic shellfish poisoning (PSP), toxin levels may not exceed 80 µg/100 g of shellfish meat, and no other shellfish neurotoxin may be detected.

When these standards are not respected, a bed is designated as closed. Some areas are closed only during set periods, when pollution levels are known to increase (in summer, for example, or near campgrounds, small farms, cattle ranches, etc.); the area is thus classified as conditionally approved.

Photo: Yves Lamontagne, Environment Canada

Municipal wastewater discharges, North Shore

Photo: Julie Soneira, Environment Canada

Petite baie de Saint-Nicolas, North Shore

To Know More

ENVIRONMENTAL PROTECTION BRANCH. 2002. *The Shellfish Water Quality Protection Program: Protecting Public Health*. Fact sheet. Environment Canada – Quebec Region, Montreal.

GOVERNMENT OF CANADA. 2004. *Harvesting Shellfish in Quebec*. Folder. Fisheries and Oceans Canada, Environment Canada and Canadian Food Inspection Agency.

Web site of the Canadian Shellfish Sanitation Program (CSSP), Canadian Food Inspection Agency: <http://www.inspection.gc.ca/english/anima/fispoi/csspccsme.shtml>.

Harvesting Shellfish in Quebec, Web site of the Canadian Shellfish Sanitation Program (CSSP) serving the general public: <http://www.www.mollusca.gc.ca>

Web site of the Environmental Protection Branch of Environment Canada: <http://lavoieverte.qc.ec.gc.ca/dpe/Anglais/dpe_main_en.asp?dpe_home>.

Web site of the Shellfish Water Quality Protection Program (SWQP): <http://lavoieverte.qc.ec.gc.ca/dpe/Anglais/dpe_main_en.asp?eau_salub1>.

Prepared by: Jacques Sénéchal
Science and Technology Branch
Environment Canada

State of the St. Lawrence Monitoring Program

Six government partners — Environment Canada, Fisheries and Oceans Canada, the Canadian Space Agency, Parks Canada Agency, the Ministère du Développement durable, de l'Environnement et des Parcs du Québec, the Ministère des Ressources naturelles et de la Faune du Québec — and Stratégies Saint-Laurent, a nongovernmental organization that works actively with riverside communities, are pooling their expertise and efforts to provide Canadians with information on the state of the St. Lawrence and long-term trends affecting it.

To this end, environmental indicators have been developed on the basis of data collected as part of each organization's ongoing environmental monitoring activities. These activities cover the main components of the environment, namely water, sediments, biological resources, uses and shorelines.

For more information on the State of the St. Lawrence Monitoring Program, please visit our Web site at **<www.planstlaurent.qc.ca>** or contact our offices at the following address:

St. Lawrence Plan
Coordination Office
1141 Route de l'Eglise
P.O. Box 10 100
Sainte-Foy, Quebec
G1V 4H5
Tel: (418) 648-3444

Published by Authority of the Minister of the Environment
© Her Majesty the Queen in Right of Canada, 2002, 2nd edition 2005
Published by Authority of the Ministre du Développement durable, de l'Environnement et des Parcs du Québec
© Gouvernement du Québec, 2002, 2nd edition 2005
Catalogue No. En153-114/5-2005E-PDF
ISBN 0-662-42145-0
Envirodoq: ENV/2005/0271A
Legal deposit – National Library of Canada, 2005
Aussi disponible en français sous le titre : *La salubrité des eaux coquillières*

This paper contains 30% post-consumer recycled fibres 4774A-01-11